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# Range Extension of the Paleback Darter

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## Abstract

Surveys from 1990 through 1992 resulted in a significant range extension of the paleback darter, *Etheostoma pallidorsum*, which is endemic to the Ouachita Mountains. Prior to 1990, it had only been collected in the upper Caddo River drainage and a tributary to the Ouachita River below Lake Ouachita. The collections that extended this darter's range occurred in tributaries of the Ouachita River above Lake Ouachita.

## Introduction

The paleback darter (*Etheostoma pallidorsum*) is endemic to the Ouachita Mountains in Arkansas (Robison and Buchanan, 1988). Prior to 1990 paleback darters had been collected only in the Caddo River drainage and one tributary of the Ouachita River below Lake Ouachita (Robison, 1974; 1980). Concern about the future of the species arose from its limited distribution and small population size. It was considered rare by the Arkansas Natural Heritage Commission in 1990 and sensitive by the United States Forest Service. (USDA Forest Service, 1990a).

## Study Area and Methods

Surveys were conducted in Montgomery, Garland, and Polk counties, Arkansas, in tributaries of the Ouachita and Caddo Rivers that are within boundaries of the Caddo and Womble Districts of the Ouachita National Forest. These surveys were made from 1990-1992 by fisheries biologists from the USDA Forest Service and US Fish and Wildlife Service. Stream sampling was conducted with a Smith-Root Electofisher Model 12 backpack shocker. One to three people used dip nets to collect the stunned fish. Sampling distance averaged 0.4 km and each site was usually in a separate perennial tributary.

From 1990-1992, 41 sites in tributaries of the Caddo River drainage were sampled. These included eight of 17 locations where paleback darters had been previously recorded, plus seven spawning sites (Robison and Harp, 1981; Robison and Buchanan, 1988; USDA Forest Service, 1990a). From 1990-1992, 50 sites in the Ouachita River drainage were sampled. Sampling was also conducted at 15 sites of the Little Missouri River and its tributaries.

Most sites were sampled as baseline fish surveys and not just for occurrence of paleback darters. All fish collected in the Ouachita River drainage were ranked according to number collected. At each site, two to four voucher specimens of each fish species including paleback darters were retained and fixed in 10% formalin for three days, washed

in tap water for three days and preserved in 50% isopropyl alcohol. Specimens were identified with standard keys (Robison and Buchanan, 1988); additionally, paleback darters were verified by Dr. Henry Robison. All preserved fish were kept at the Caddo and Womble Ranger Districts.

## Results

Nine known paleback darter spawning areas were recorded prior to our study (Robison and Harp, 1981; Robison and Buchanan, 1988; USDA Forest Service, 1990a). Two spawning areas had been eradicated by 1990 due to residential construction.

We collected paleback darters in numerous locations in the Caddo River drainage. Of the 41 sites sampled, paleback darters were found in 30 sites: 1) 15 new sites in the Caddo River drainage (Table 1); 2) in all eight sites sampled that were previously known to have populations; and 3) in all seven previously known spawning sites.

Table 1. New locations for paleback darters in the Caddo River drainage, 1990-1992. Each listing represents a separate perennial stream. Paleback darters had been found prior to 1990 in the Caddo River and in Lick Creek at different locations than listed below.

T3S R26W S29; T3S R25W S30	Caddo River
T3S R26W S20, S23	Lick Creek
T3S R26W S23	Trib. to Lick Creek
T3S R26W S23	Trib. to Lick Creek
T3S R25W S18, S29	Hamilton Creek
T3S R25W S21	Trib. to Lick Creek
T3S R25W S17	Harvey Branch
T4S R26W S9	Trib. to Polk Creek
T4S R26W S3	Trib. to Polk Creek
T4S R26W S1	Trib. to Polk Creek
T4S R26W SI, S6	Trib. to Polk Creek

Our surveys extended the known distribution of this darter into nine tributaries of the Caddo River drainage. Distribution information of the paleback darter prior to 1990 was derived from Robison and Harp (1981), Robison and Buchanan (1988), and the USDA Forest Service (1990a).

In the Quachita River drainage, paleback darters were found in 13 of the 50 sites sampled (Table 2). These surveys extended the range of this darter into seven tributaries of the Quachita River above Lake Quachita and into four tributaries of the Quachita River below Lake Quachita.

Table 2. New locations for paleback darters in the Ouachita River drainage, 1990-1992. Each listing represents a separate perennial stream.

T3S R23W S16	Trib. to Mazarn Creek
T3S R27W S8	Trib. to Kate's Creek
T3S R27W S3, S10	Bill Hill Creek
T3S R23W S16	Wake Creek
T3S R23W S21	Blue Creek
T3S R28W S23	Trib. to Big Fork
T3S R28W S14, S34	Big Fork
T3S R27W S18	Trib. to Kate's Creek
T3S R27W S18	Kate's Creek
T2S R28W S34	Trib. to Big Fork
T3S R23W S16	Trib. to Mazarn Creek

As a result of this study and previous studies, paleback darters are now known from 17 tributaries (and seven spawning sites) within the Caddo River drainage and from 12 tributaries in the Quachita River drainage. No additional spawning areas were located during the present study. No paleback darters were found in the Little Missouri River drainage.

Compared to numbers of other species of fish collected, numbers of paleback darters collected were low. Paleback darters were the only species collected in a few upland small streams, but in larger streams their numbers were the lowest compared to other species. The highest number of paleback darters collected at any site was 12; but the average number taken from sites was four. In tributaries of the Quachita River, numbers of other fish species found with the paleback darter ranged from four to 16 (mean = seven species). The species most often immediately found with the paleback darter were (in decreasing order): orangebelly darter (*Etheostoma radiosum*), creek chub (*Semotilus atromaculatus*), longear sunfish (*Lepomis megalotis*), central stoneroller (*Campestris anomalum*), and striped shiner (*Luxilus chrysocephalus*). Ranking number of

fish commonly taken at sites where paleback darters were found was as follows (in decreasing value): creek chub, central stoneroller, striped shiner, longear sunfish, green sunfish (*Lepomis cyanellus*), orangebelly darter.

Paleback darters inhabit margins of pools and side channels of clear, moderate-to-high gradient, perennial streams and are occasionally associated with vegetation over mud substrate (Robison, 1980). During this study, paleback darters were typically found in these habitats during the non-spawning season. However, during the fall and winter (spawning season), we found paleback darters in both drainages occasionally in fast-moving water (0.3 m in depth) or associated with aquatic vegetation.

## Discussion

This work extends the range of the paleback darter in tributaries of the Caddo and Ouachita rivers. Many of the small upper Ouachita River tributaries sampled in this study had never been previously sampled and likely explains the range extension. This darter is more widespread than previously thought; however, numbers collected at all sites were low. Hambrick and Robison (1979) also found population sizes to be low in the Caddo River drainage. The fish found with the paleback darter in the Ouachita River drainage are quite similar to findings by Robison and Harp (1981) in the Caddo River drainage.

Paleback darters found in the autumn and winter in fast moving water were probably moving into spawning areas, including spring heads and seeps. Paleback darters spawn mainly from February through March (Robison and Buchanan, 1988). Known spawning areas are vegetated (pers. obs.). Most of the known paleback darter spawning areas become intermittent and dry up during summer months (pers. obs.). The presence of this darter in two areas in the autumn and winter in a vegetated small first order stream and in a spring may represent two previously unknown spawning sites.

These surveys were conducted to protect aquatic resources according to the Amended Land and Resource Management Plan for the Ouachita National Forest (USDA Forest Service, 1990b). Aquatic surveys are essential to determine species that are present and the status of these species. This information aids in making informed management decisions that can prevent trends toward endangerment that would result in Federal listing (USDA Forest Service, 1990 b, 1990c).

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